Familial clustering of Staphylococcus aureus bacteraemia

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FAMILIAL CLUSTERING OF STAPHYLOCOCCUS AUREUS BACTERAEMIA

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Background: Staphylococcus aureus is a major cause of Infective Endocarditis (IE). A genetic predisposition to Staphylococcus aureus bacteraemia (SAB) has been demonstrated in mice and we therefore we examined if a family history of SAB in first-degree relatives increases the risk of SAB and whether the risk changes with gender of the first-degree relatives.

Methods: We used nationwide registers to identify citizens with a first episode of SAB (index-cases) admitted to hospital in the years 1991-2012 and to trace their first-degree relatives (study-cases). Poisson regression was used to determine rate ratios (RRs) of SAB using the incidence in the general population as a reference. Sensitivity analyses were performed to take contagiousness bias into account, by excluding the study-cases diagnosed with SAB <1 year after the index-cases acquired SAB.

Results: From 1991-2012, 23.607 patients were diagnosed with SAB. For the entire Danish population we identified 10.623 offspring's to 5214 maternal index-cases, 18.392 offspring's to 8346 paternal index-cases and 7412 siblings to 4825 index-cases of siblings. Study-cases (children/siblings) had a mean follow up time of 2.5 years (IQR: 1.25-3.75). In total, 64 study-cases acquired SAB during the study period. The RR of incurring SAB was 2.10 (95% CI (CI) 1.65-2.68) in subjects having a first-degree relative previously admitted with SAB. RRs were 1.7 (CI 1.00-2.84) and 2.2 (CI 1.65-2.91) having a sibling or a parent admitted with SAB, respectively, as compared to the general population. A paternal or maternal index-case >50 years was associated with RRs of 2.03 (CI 1.37-3.00) and 1.79 (CI 1.04-3.09), respectively. No significant results were observed for parents ≤ 50 years. Siblings to a male index case had a RR of 2.4 (CI 1.43-3.92), whereas no significant risk was observed in siblings to a female index case (RR 1.2, CI 0.74-3.31). However, no interaction with gender was found, neither in parents (p=0.80) nor in the sibships (p=0.14). The sensitivity analysis resulted in significant RRs slightly different from the primary RRs.

Conclusion: For the first time a significant familial clustering of SAB has been demonstrated.